HHS Public Access

Author manuscript

J Community Health. Author manuscript; available in PMC 2017 February 02.

Published in final edited form as:

J Community Health. 2012 August ; 37(4): 912–916. doi:10.1007/s10900-011-9507-y.

An Analysis of Content in Comprehensive Cancer Control (CCC) Plans that Address Chronic Hepatitis B and C Virus Infections as Major Risk Factors for Liver Cancer

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Abstract

Chronic hepatitis B and C virus (HBV and HCV) infections are among the leading causes of preventable death worldwide. Chronic viral hepatitis is the cause of most primary liver cancer, which is the third leading cause of cancer deaths globally and the ninth leading cause of cancer deaths in the U.S. The extent to which Comprehensive Cancer Control (CCC) programs in states, tribal governments and organizations, territories, and Pacific Island jurisdictions address chronic hepatitis B and/or hepatitis C infections as risk factors for liver cancer or recommend interventions for liver cancer prevention in their CCC plans remains unknown. We searched CCC plans for this information using the search tool at http://www.cdc.gov/cancer/ncccp/ to access the content of plans for this information. A combination of key search terms including “liver cancer,” “hepatitis,” “chronic alcohol,” and “alcohol abuse” were used to identify potential content regarding liver cancer risk factors and prevention. Relevant content was abstracted for further review and classification. Of 66* CCC plans, 27% (n=18) addressed liver cancer using the above-mentioned search terms. In the 23 plans that addressed HBV and/or HCV, there were 25 goals, objectives, strategies, and outcomes aimed at reducing the incidence or prevalence of HBV and/or HCV infection. While nearly a third of CCC programs identify at least one goal, objective, strategy, outcome, or prevention program to reduce cancer burden in their CCC plans, few plans discuss specific actions needed to reduce the burden of liver cancer.

Keywords

liver cancer; hepatitis; chronic alcohol; alcohol abuse; comprehensive cancer control plans

*Although CDC funds 65 programs, one of the Pacific Island Jurisdiction grantees is the Federated States of Micronesia (FSM). This national program supports four FSM states, each of which submits a cancer plan to CDC for a total of 69 plans. During this time period, 66 plans were available on the website.

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Disclaimer:

The findings and conclusions in this report are those of the authors and do not necessarily represent the official position of the Centers for Disease Control and Prevention.

Introduction

Liver cancer, primarily hepatocellular carcinoma (HCC), is the third leading cause of death from cancer worldwide and the ninth leading cause of cancer deaths in the United States (1). HCC incidence tripled in the United States from 1975 through 2005, with the highest incidence among Asian/Pacific Islanders (A/PIs) who immigrated to the United States (2). Chronic hepatitis B and C infections are risk factors for liver cancer, resulting in cirrhosis and eventually HCC (3). In the United States, an estimated 3,000 people die each year from chronic liver disease deaths associated with HBV infections and 12,000 people die annually from HCV infections (4). Only about half the adults who are at high risk for HBV infection have received the hepatitis B vaccine (3). Development of viral hepatitis services, including screening with care referral for persons chronically infected with HBV or HCV, full implementation of vaccine-based strategies to eliminate hepatitis B, and improved public health surveillance are needed to help reverse the trend in HCC incidence (1).

In 1998, the Centers for Disease Control and Prevention (CDC) provided funding to five states and one tribal health board that had existing comprehensive cancer control (CCC) plans (5). Since 1998, the number of programs funded by CDC through the National Comprehensive Cancer Control Program (NCCCP) has grown from six to 65 (6). Health agencies use the funding to establish broad-based CCC coalitions, assess the burden of cancer, and develop and implement CCC plans. These plans include interventions to reduce cancer incidence and mortality (5).

CCC programs in all 50 states, the District of Columbia, seven tribal governments, and seven territories and jurisdictions are challenged to raise awareness and implement interventions to prevent and control cancer in their local populations. The objectives of this analysis are: (1) to identify the number of NCCCP programs that address liver cancer and/or chronic HBV and/or HCV as risk factors for liver cancer in their CCC plans, and (2) to assess the extent to which plans provide overall goals and strategies for prevention of both hepatitis and liver cancer.

Methods

In June 2010 and July 2010, we reviewed all CCC plans (n=66) posted on the Cancer Control P.L.A.N.E.T. website (http://cancercontrolplanet.cancer.gov/). Although CDC funds 65 programs, one of the Pacific Island Jurisdiction grantees is the Federated States of Micronesia (FSM). This national program supports four FSM states, each of which submits a cancer plan to CDC for a total of 69 plans. During this time period, 66 plans were available on the website. We used a search tool specifically designed to perform plan searches (http://apps.nccd.cdc.gov/CCCSearch/Default/Default.aspx). A list of key search terms was developed that identified language within plans indicating a relation to liver cancer and risk factors of liver cancer. Key terms included the following exact phrases or words: *liver cancer, hepatitis, chronic alcohol,* and *alcohol abuse*. Chronic alcohol and alcohol abuse are important risk factors for liver cancer and were therefore selected as key terms; however, due to the few programs that addressed them in terms of liver cancer, data is not shown for these terms.

An initial abstraction form template was developed in Microsoft Excel for liver cancer and hepatitis to collect information about the context in which each term was referenced in the CCC plans. Templates were updated and finalized to include content abstracted from all relevant CCC plans. The sentence in the plan related to the term was reviewed for specific contextual associations related to liver cancer and hepatitis. If multiple key terms identified the same content, the duplicate content was not abstracted. If a CCC plan included any of the search terms, but the content was found to be irrelevant for the purpose of this review, it was not included in the analysis. Finally, key terms used did not always yield content related to liver cancer, as some were found referenced in personal testimonies. This content was either not abstracted or removed after later determination of relevance.

The context of each key term was evaluated for whether it appeared in background information; as a goal, objective, or strategy/tactic; as a risk factor; as a recommendation that will be promoted; or other. Within CCC plans, a goal refers to a specific program achievement by a certain time period. An objective refers to a program's efforts and/or actions taken to achieve the goal. A strategy and/or tactic refer to a program undergoing specific activities needed to accomplish the goal. An outcome is defined as a program's expected result of their achievement. An initial template, similar to the previous one, was created in Microsoft Excel to include each of the described above. After evaluation of each term's content, the template was finalized and content was placed into the template based on how it was stated and or placed in the plan.

Due to the few plans addressing this issue, an in-depth, program-level analysis using one abstractor was conducted to identify the number of plans addressing liver cancer and hepatitis as a major risk factor for liver cancer, along with screening guidelines and evidence-based interventions. Qualitative and quantitative data were collected to abstract the information. The abstractor used the search function within the documents to locate each occurrence of the key term. Once a key term for a specific priority was located, the abstractor read the surrounding text to determine of the content was relevant to the analysis. When a relevant match was found, the data were abstracted into the appropriate template.

Once the data was abstracted, qualitative and quantitative coding was conducted to develop an understanding of program plans to reduce the burden of liver cancer and implement activities aimed at preventing the cancer. Categories were created based on a review of the data collected and organized into tables for easier understanding of the various types of content collected from the plans.

Results

Out of 66 CCC plans, 18 (27%) had content that addressed liver cancer by identifying risk factors; the current burden and causes of liver cancer; goals, objectives, and strategies; incidence and prevalence; at-risk populations, or in another context (Table 1). Twenty three CCC plans (35%) included content related to the term "hepatitis" by identifying hepatitis either as a risk factor for cancer; goals, objectives, strategies to reduce the burden of hepatitis; or as a preventable measure for hepatitis B and/or C (Table 2). Overall, we abstracted 46 content items from the 18 CCC plans related to liver cancer and 47 content

items from the 23 CCC plans related to chronic hepatitis B and/or C. Sixty-one percent (n =11/18) of content abstracted addressed risk factors that lead to liver cancer, 64% (n=7/11) of these plans specifically identified chronic hepatitis B and/or C as a risk factor. Table 3 provides examples of content items related to interventions, such as awareness campaigns and vaccination programs, for liver cancer and indicates where they were found in the plan (goal, objective, or strategy). Forty-four percent (n=8/18) of content items related to liver cancer addressed the current burden of liver cancer, while only one plan identified future steps for addressing liver cancer.

There were 25 items abstracted related to a goal, objective, strategy, or outcome related to chronic hepatitis B and/or C infection, with 44% (n=11/25) of CCC plans specifically emphasizing at least strategy to reduce the current burden of chronic hepatitis B and/or C. Thirty-five percent (n=8/23) of these CCC plans address a prevention and/or vaccination program for hepatitis B to reduce the burden of liver cancer. Table 4 provides examples of content items in CCC plans related to interventions for hepatitis prevention and indicates where the items were found. Three CCC plan contained content related to chronic alcohol; however, only one of these plans described it as a risk factor for liver cancer. Ten CCC plans include content related to alcohol abuse; however, only four of these linked the relationship to cancer, and none of them were linked specifically to liver cancer.

Discussion

It is estimated that HBV and HCV infections cause nearly 1 million deaths each year (7). Liver cancer incidence rates continue to increase, which may be due to chronic hepatitis B and C infections (3). Our results show that most CCC plans do not address the connection between chronic hepatitis B and/or hepatitis C infection and liver cancer. Many chronically infected persons are not aware that they have been infected until symptoms of advanced liver disease develop (3). Therefore, it is important that CCC plans identify action steps in preventing the risk factors associated with liver cancer. Few CCC plans address a prevention program to reduce the burden of liver cancer. However, states with large A/PI populations were more apt to address liver cancer, and some plans target specific populations including American Indian and Alaskan Natives, who have been found to have the highest rate of liver-related death of ethnic groups in the United States (8). While a small proportion of CCC plans address “liver cancer” and “hepatitis”, a greater need of awareness and evidence-based interventions need to be developed to address this cancer. According to the 2010 Institute of Medicine (IOM) Report, a lack of public and provider awareness, as well as a lack of public resource allocation are the primary underlying causes of high rates of chronic hepatitis B and C in the United States (3). The IOM provides three recommendations for the prevention and control of chronic hepatitis B and C, including improved data surveillance, improved provider and community education, and integration and enhancement of viral hepatitis services (2). In 2010, CDC’s Comprehensive Cancer Control Branch developed six priorities to guide the work of grantees funded under the NCCCP and to focus on common and cross-cutting elements among programs. Enhancing data collection and reporting of incidence, prevalence, and mortality, as well as improving awareness are two cross-cutting priorities that will guide interventions and the development and evaluation of comprehensive approaches to cancer prevention and control. Data collection and education may increase in

the future as programs begin to adapt these priorities and incorporate them into their CCC plans.

Limitations

One limitation of this content analysis was that we may have missed relevant content in the CCC plans because of the search terms we used. Another limitation is the fact that a single abstractor determined what content was relevant and the process was not validated. While most qualitative studies have two or more abstractors, due to the few number of plans that addressed the issue, as well as the lack of staff support during this time, it was decided that one abstractor would be sufficient. Another limitation is that other documents that may have been more recent, such as CCC action plans or work plans, were not reviewed. Analysis of these other documents could provide greater details as to the current work be done to prevent liver cancer. Furthermore, current CCC plans maybe outdated as some programs were revising some or all of their plans.

Conclusions

Through review and analysis of liver cancer, chronic hepatitis B, and hepatitis C content in the most current available CCC plans, we found that few programs specifically address the importance and rising burden of liver cancer. Most CCC programs that mention liver cancer in their plans provide background information regarding risk factors associated with the cancer and/or a reference to goals and strategies for reducing the current burden. Only one CCC plan identifies future steps for addressing liver cancer. While most chronic hepatitis B and/or hepatitis C content was related to an objective or strategy for reducing the burden of these infections, very few CCC programs identified the preventative measures that would lead to lower liver cancer burden. Public health professionals need to find better ways to implement and disseminate cost-effective interventions that promote early detection of chronic infection to allow for treatment of chronic hepatitis B and/or hepatitis C, thereby reducing the incidence of liver cancer. This review highlights an opportunity for technical assistance related to increasing awareness of chronic hepatitis as a risk for liver cancer and to direct programs to resources and partners to help lessen this burden.

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Table 1

Liver Cancer Related Content in Comprehensive Cancer Control (CCC) Plans (n=18)

Context	Number of plans
Addresses risk factors as a cause of liver cancer	11
Identifies Hepatitis B/C as a risk factor	7
Addresses current burden of liver cancer	8
Goals/Objectives/Strategies	7
Identifies at least one goal related to liver cancer	1
Identifies at least one objective related to liver cancer	2
Identifies at least one strategy related to liver cancer	5
Addresses cause of death of liver cancer	5
Addresses prevalence and incidence of liver cancer in populations	5
Addresses at-risk populations/disparities/health inequity	4
Discuss liver cancer as background information	3
Addresses liver cancer diagnosis and survival rate after diagnosis	2
Identifies future steps for addressing liver cancer	1

Table 2

Hepatitis B/C Related Content in Comprehensive Cancer Control Plans (n=23)

Context	Number of plans
Addresses hepatitis B/C as a risk factor for cancer	14
Identifies Hepatitis as a risk factor primarily for liver cancer	7
Goals/Objectives/Strategies/Tactic/Outcomes	25
Identifies at least one goal related to hepatitis B/C	4
Identifies at least one objective related to hepatitis B/C	6
Identifies at least one strategy related to hepatitis B/C	11
Identifies at least one tactic related to hepatitis B/C	1
Identifies at least one outcome related to hepatitis B/C	3
Addresses a prevention and/or vaccination program to reduce burden	8

Table 3

Examples of Goals/Objectives/Strategies for Liver Cancer in CCC plans

Goals
By 2010, increase the survival rate of primary liver cancer by 20%.
By 2010, all A/PI should be screened for hepatitis B to decrease the liver cancer mortality rate among A/PI.
Objectives
Reduce death and illness from liver cancer.
Within 5 years of implementation, increase local diagnostic capability for prostate and liver cancer.
Strategies
Implement a culturally appropriate campaign aimed at A/PI communities and health care providers to increase their awareness about hepatitis B, liver cancer, and preventive measures.
Liaise with the Sexually Transmitted Infections (STI) Program to share data and incorporate cancer awareness in its activities emphasizing the relationship between hepatitis B, alcohol and liver cancer.
Assess, monitor, promote and provide Hepatitis B vaccination series for people of all ages to prevent one type of liver cancer.

Table 4

Examples of Goals/Objectives/Strategies/Tactics/Outcomes for Hepatitis B and/or C in CCC plans

Goals
By 2010, reduce hepatitis B infection by 99%.
By 2012, each jurisdiction will achieve completed hepatitis B vaccination series in 90% of 2-year-old children.
Objectives
Assure hepatitis B immunization of all children, teenagers, and adults, especially those of childbearing age or who remain sexually active.
Screen all A/PI for hepatitis B infection, especially those who are foreign born, 18 years of age and under.
Each jurisdiction will achieve completed hepatitis B vaccination series in 90% of 2-year-old children by 2012.
Promote Hepatitis B vaccine for children 19–35 months of age.
Promote Hepatitis B vaccines for at-risk adults accessing STD clinics.
Strategies
Screen all A/PIs for hepatitis B and immunize those who are not protected.
Promote existing hepatitis B immunization program.
Work with Regional Comprehensive Cancer Program to implement HBV vaccination program.
Implement at least two interventions annually to increase the number of children who receive hepatitis B vaccine by the time they enter kindergarten.
Provide at least two opportunities annually for people working with middle school children to learn more about viral hepatitis prevention and resources.
Increase the proportion of sexually active adults who receive free hepatitis B vaccine by 2010.
Educate health-care providers about how to talk to parents and patients about viral hepatitis and HPV and long-term benefits of the hepatitis B and HPV vaccines.
Provide education and awareness of the transmission routes for hepatitis C in order to decrease risky behaviors.
Tactics
Conduct a media campaign that includes culturally and linguistically appropriate materials about what every A/PI should know regarding liver cancer and hepatitis B, a Website in Asian languages, and a personally staffed toll-free number.
Expand collaboration to all A/PI groups, health insurers, the Department of Health Services, and policy-makers for funding, monitoring, and successful hepatitis B and liver cancer preventive outcomes.
Work with insurance companies and state and federal legislators for hepatitis B immunization coverage for adults.
Provide early treatment of hepatitis B and C infections and screen those with chronic hepatitis for liver cancer.
Make hepatitis B immunization a Health Plan Employer Data and Information Set (HEIDIS) indicator.
Educate health care providers about the need for hepatitis B screening in all A/PI, and educate them about liver cancer, its risk factors, persons at risk, and culturally appropriate ways to reach and communicate with their A/PI patient populations.
Outcomes
By 2011, decrease the number of children and adults who contract hepatitis C by 30%.
Immunization rates for hepatitis B will increase by 5%.